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**WHAT IS CLAIMED IS:**

1. Planar antenna comprising planar metal-plated, at least on one side, dielectric waveguide, to the side walls of which two metal waveguides are adjoining that are connected with the planar waveguide via periodical array of slots, wherein array period comprises two slots shifted or inclined with respect to each other, and radiating elements having two symmetry planes are placed in the nodes of a rhombic mesh on the surface of the planar waveguide.
2. Device on claim 1 in which the planar waveguide has a form of a rhomb.
3. Device on claim 1 in which the metal waveguides have rectangular cross-section.
4. Device on claim 3 in which the metal waveguides are contacting with the planar one by its wide sides.
5. Device on claim 3 in which the metal waveguides are contacting with planar one by its narrow sides.
6. Device on claim 1 in which the plane waveguide is metal-plated on two sides and the radiating elements are implemented in the form of square or round holes in one of metallizations.
7. Device on claim 1 in which the plane waveguide is metal-plated on one side, and the radiating elements are implemented as metallizations having a square or round form.